

LUNG CANCER

BACKGROUND

Note: All information and data below refer to both lung cancer and to cancer of the bronchus (the tube(s) responsible for carrying air to and from the lungs).

Facts about lung cancer

- Lung cancer is the leading cause of cancer death for both men and women. More people die of lung cancer than of colon, breast, and prostate cancers combined.
- The average age of people found to have lung cancer is 71.
- Tobacco is the leading cause of lung cancer.
- Annual smoking costs in Massachusetts are estimated at \$4.3 billion: \$2.8 billion in personal health care expenses and \$1.5 billion in lost productivity due to premature deaths of smokers.
- In the nineteenth century, lung cancer was rare except for cases among miners and some other occupational groups.
- Lung cancer became a milestone in epidemiology when its predominant cause, tobacco smoking, was revealed in a series of landmark studies beginning in 1950.

What is lung cancer?

- The lungs are two sponge-like organs found in the chest. The right and left lung have sections called lobes. The lungs bring air in and out of the body, taking in oxygen and getting rid of carbon dioxide gas, a waste product.
- The windpipe or trachea brings air down into the lungs and divides into tubes called bronchi. The bronchi are divided into smaller branches called bronchioles and at the end of these small branches there are tiny air sacs known as alveoli.
- Lung cancer starts in the lining of the bronchi, trachea, bronchioles, or alveoli. The cancer cells can't be seen on an x-ray and the cancer cells don't cause symptoms until the cancer cells grow. The tumor needs to get to a certain size before it can be seen on an x-ray.
- Cancer cells can break away and spread to other parts of the body in a process called metastasis. Lung cancer is a life-threatening disease because it often spreads in this way before it is found making treatment more difficult.
- There are two main types of lung cancer, small cell lung cancer and non-small cell lung cancer. About 15% of all lung cancers are of the small cell type. The other 85% of lung cancers are of the non-small cell type. The type of lung cancer needs to be identified in order to provide the correct treatment.

What are the signs and symptoms of lung cancer?

Symptoms of lung cancer include:

- A lingering smoker's cough.
- A cough in nonsmokers that lasts for more than two weeks.
- Chest pain that is present, even when you're not coughing.
- Shortness of breath, wheezing, or hoarseness.

- Spitting up blood or fluid that has changed in color or volume.
- Shoulder or arm pain (may be a part of Horner's syndrome).
- Recurring pneumonia or bronchitis.
- Fever or weakness without a known reason.
- Unaccountable weight loss - losing weight without trying.
- Difficulty swallowing.
- Enlarged lymph nodes in the neck.
- Drooping of one eyelid (part of Horner's syndrome).
- Club-shaped fingertips and/or tips of the toes, with or without joint pain and swelling of the lower legs.

Talk with your health care professional about any questions you may have.

What are the risk factors for lung cancer?

Risk factors for lung cancer include:

- Smoking
Note: 87% of all lung cancers are caused by smoking. The risk of lung cancer is *10 times greater* for persons who smoke up to one pack of cigarettes a day and *20 times greater* for persons who smoke more than one pack of cigarettes a day than for persons who do not smoke.
- Occupational, and in some cases environmental, exposures (e.g., asbestos, metals)
- Exposure to secondhand smoke (other people's smoke)

PREVENTION AND SCREENING

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How can I reduce my risk of developing lung cancer?

- If you are a non-smoker, don't start. If you smoke cigarettes, cigars, and pipes, try to quit.
- Be aware of the possible job-related exposures to agents that cause cancer by educating yourself about the materials that you use in your daily routines at the work place or job site.
- Remove yourself from areas that contain second-hand smoke.

Screening for lung cancer

Diagnosis at the earliest possible stage makes treatment much more effective. At this time, no screening tests are routinely recommended for early detection of lung cancer.

The best way to find lung cancer early is to report any symptoms to your health care professional right away.

DIAGNOSIS AND TREATMENT

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This site provides general information that may apply to your specific situation. You may visit the National Cancer Institute's web site www.cancer.gov for the most current cancer information and clinical trials. Once there, you will be able to select from a full range of cancer topics. If you want to speak with a cancer information expert confidentially, you may call 1-800-4CANCER (1-800-422-6237) between 9:00 AM - 4:30 PM.

It is always best to discuss your personal risk for cancer as well as your screening, diagnosis and treatment needs with your health care provider before you commit to a course of action.

How is lung cancer diagnosed?

If the health care professional suspects lung cancer, there will be a medical history evaluation, a physical exam, and a chest x-ray done. One of the other following tests might also be used to help detect lung cancer:

- A pulmonary function test to determine how well the lungs are working during exercise.
- A microscopic sputum exam to determine what is being coughed up (sputum cytology).
- Imaging tests such as x-rays, magnetic fields, sound waves, or radioactive substances to create pictures of the inside of the body (i.e. chest x-rays, computed tomographic (CT scan)).

To confirm the presence of lung cancer, the doctor must examine tissue from the lung (a biopsy). A number of procedures may be used to obtain the tissue:

- Needle aspiration (a needle is inserted through the chest into the tumor to remove a sample of tissue).
- Bronchoscopy (a thin, lighted tube slid down the throat into the lungs and tissue samples are taken).
- Endobronchial ultrasound (a bronchoscopy tube is attached to the emitter and receiver of an ultrasound machine in order to look at the size of the tumor and whether there are enlarged lymph nodes).
- Mediastinoscopy (under general anesthesia, a small cut is made in the neck and a thin, lighted tube is inserted behind the chest bone to remove nodes for biopsy).
- Thoracentesis (a needle is used to withdraw a sample of the fluid that surrounds the lungs for examination).
- Thoracoscopy (a slender, lighted instrument is inserted into the lung cavity to examine the lung and chest wall and to take tissue samples).

How is lung cancer treated?

The treatment options for lung cancer are surgery, radiation therapy, and chemotherapy, either alone or in combination, depending on the type and stage of the cancer.

Surgery is done depending on the type and stage of cancer.

- If a lobe (section) of the lung is removed, the surgery is called a lobectomy. Removing only part of the lobe is called a wedge resection. If the entire lung is removed, the surgery is called a pneumonectomy.
- There is a new kind of surgery for people with early stage lung cancer. It is called video-assisted chest surgery. This approach is only for tumors smaller than about 2 inches.

Radiation is sometimes used as the main treatment of lung cancer. It might be used for people who may not be healthy enough to have surgery.

- The radiation may come from outside the body (external radiation). External radiation is the type most often used to treat lung cancer.
- Radioactive materials may also be placed directly into the tumor (brachytherapy).

Chemotherapy is useful for cancer that has spread (metastasized) to organs beyond the lung. Several drugs may be given at the same time.

STATISTICS

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How many people are diagnosed with lung cancer? How many people die from it?

- The American Cancer Society estimates that in 2007 there will be 213,380 new cases of bronchus & lung cancer in the United States (114,760 in men and 98,620 in women). The estimated new cases of bronchus & lung cancer for 2007 in Massachusetts are 5,060.
- The American Cancer Society also estimates that in 2007 there will be 160,390 deaths from bronchus & lung cancer in the United States (men are 89,510 and women are 70,880). The estimated deaths from bronchus & lung cancer for 2007 in Massachusetts are 3,630.
- The national five-year relative survival rates for 1996-2003 show that 13.4% of men survive five years after diagnosis and 17.7 % of women survive five years after diagnosis of bronchus & lung cancer.
- In Massachusetts between 2000 and 2004, the age-adjusted incidence rate of bronchus & lung cancer in men was 85.8 cases per 100,000 males and in women was 62.1 cases per 100,000 females. Men are 1.4 times more likely to develop bronchus & lung cancer than women.
- The age-adjusted mortality rate of bronchus & lung cancer was higher in Massachusetts men (68.5 deaths per 100,000 males) than in Massachusetts women

(44.6 deaths per 100,000 females) between 2000 and 2004. Men are 1.5 times more likely to die from bronchus & lung cancer than women.

- The age-adjusted incidence rate of bronchus & lung cancer for males is 3.6% lower in Massachusetts than nationally and for females is 12.5% higher in Massachusetts than nationally (based on data from the North American Association of Central Cancer Registries, 2000-2004).
- The age-adjusted mortality rate of bronchus & lung cancer for males is 6.6% lower in Massachusetts than nationally and for females is 8.5% higher in Massachusetts than nationally (based on data from the North American Association of Central Cancer Registries, 2000-2004).

For additional statistics on bronchus & lung cancer in Massachusetts, see Massachusetts Community Health Information Profile (MassCHIP) Instant Topics- Cancer: Bronchus and Lung [<http://masschip.state.ma.us/InstantTopics/affiliate.htm>]. Please click on an affiliation then find bronchus & lung cancer for the instant topics.

DPH PROGRAMS AND INFORMATION

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DPH lung cancer programs

The Massachusetts Department of Public Health, mainly through the [Massachusetts Tobacco Control Program](http://www.mass.gov/dph/mtcp/home.htm) (<http://www.mass.gov/dph/mtcp/home.htm>), is working to reduce the risk of lung cancer through the following activities:

- Helping smokers quit smoking through statewide services including the [Try to Stop Tobacco](http://www.trytostop.org) Resource Center's telephone helpline (1-800-TRY-TO-STOP or 1-800-879-8678), website (www.trytostop.org), and educational print materials.
- Utilizing the [QuitWorks program](http://www.quitworks.org) (www.quitworks.org), which provides health care clinicians with a simple approach to treating their patients who smoke by linking them to proactive telephone counseling and the state's range of effective tobacco treatment services.
- Providing funding and training to local boards of health to promote and enforce local regulations that reduce youth access to tobacco products and reduce exposure to environmental tobacco smoke.
- Raising public awareness about the health issues related to tobacco use and the need for tobacco control public policy initiatives through intensive community smoking intervention grants and system change grants in rural birthing hospitals.
- Measuring changes in adult and youth attitudes toward tobacco use.
- Conducting public awareness programs around the risk of lung cancer that is associated with exposure to radon gas.
- Responding to inquiries about environmental and occupational risks for lung cancer.

Publications and Materials

Reports

The following reports can be accessed from the Massachusetts Cancer Registry website at <http://www.mass.gov/dph/bhsre/mcr/canreg.htm>

- *Cancer Incidence and Mortality in Massachusetts - Statewide Report 2000-2004*
- *Cancer Incidence in Massachusetts – City/Town Supplement 2000-2004*
- *Cancer Incidence and Mortality in Massachusetts - Statewide Report 1998-2002 (which includes a special section on lung cancer)*

Massachusetts Tobacco Control Program

- Smoking Attributable Mortality, Morbidity, and Economics Costs Massachusetts 2001
http://www.mass.gov/dph/mtcp/reports/sammec_2004.pdf

Pamphlets, Brochures and Videos

The Try-to-Stop Tobacco Resource Center offers education pamphlets, booklets, signs, posters, fact sheets and other items. Tobacco information and cessation materials are available in ten languages. You may obtain a copy of the current order form by contacting the Try-to-Stop Tobacco Resource Center at 617-482-9485.

These materials may be ordered from:

Try-to-Stop Tobacco Resource Center
JSI Research and Training Institute, Inc.

44 Farnsworth St

Boston, MA 02122-1211

telephone: 617-482-9485, fax: 617-482-0617

e-mail: mtec@jsi.com

Additional resources, information, and materials are available from the [Massachusetts Tobacco Control Program](http://www.mass.gov/dph/bsas/funding/tobacco/resources.htm) (<http://www.mass.gov/dph/bsas/funding/tobacco/resources.htm>).

References

Adami, Hans-Olov, Hunter, David, and Trichopoulos, Dimitrios, eds. *Textbook of Cancer Epidemiology*. New York: Oxford University Press, 2002, pp. 248-280.

American Cancer Society (ACS)

Cancer Reference Information: Learn About Lung Cancer - Non-Small Cell

Cancer Reference Information: Learn About Lung Cancer – Small Cell

RELATED LINKS

Note: All information and data below refer to both lung cancer and to cancer of the bronchus (the tube(s) responsible for carrying air to and from the lungs).

Background/General Links

American Cancer Society (ACS)

- Cancer Reference Information: Learn About Lung Cancer - Non-Small Cell
http://www.cancer.org/docroot/CRI/CRI_2x.asp?sitearea=&dt=15
- Cancer Reference Information: Learn About Lung Cancer – Small Cell
http://www.cancer.org/docroot/CRI/CRI_2x.asp?sitearea=&dt=16

American Lung Association

<http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=35427>

Centers for Disease Control and Prevention (CDC)

- Lung Cancer
<http://www.cdc.gov/cancer/lung/>

Harvard Center for Cancer Prevention

- Your Disease Risk: Lung Cancer
<http://www.yourdiseaserisk.harvard.edu/hccpquiz.pl?func=start&quiz=lung>

National Cancer Institute (NCI)

- Lung Cancer Home Page
<http://www.cancer.gov/cancertopics/types/lung>
- What You Need To Know About Lung Cancer
<http://www.cancer.gov/cancertopics/wyntk/lung>

Oncology Nursing Society and Cancer Care

- It's Time to Focus on Lung Cancer
<http://www.lungcancer.org/>

Prevention and Screening Links

National Cancer Institute (NCI)

- Lung Cancer (PDQ): Prevention
<http://www.cancer.gov/cancertopics/pdq/prevention/lung/patient>
- Lung Cancer (PDQ): Screening
<http://www.cancer.gov/cancertopics/pdq/screening/lung/patient>

Diagnosis and Treatment Links

American Cancer Society (ACS)

- NexProfiler Treatment Option Tool for Lung Cancer (Non-Small Cell)
<https://www.cancer.nexcura.com/Secure/InterfaceSecure.asp?CB=278>
- NexProfiler Treatment Option Tool for Lung Cancer (Small Cell)
<https://www.cancer.nexcura.com/Secure/InterfaceSecure.asp?CB=268>

American Lung Association: Treatment Options and Support

<http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=22547>

National Cancer Institute (NCI)

- Lung Cancer: Treatment
<http://www.cancer.gov/cancertopics/treatment/lung>
- Clinical Trials
http://www.cancer.gov/clinical_trials/

Statistics Links

American Cancer Society (ACS)

- Statistics

http://www.cancer.org/docroot/STT/STT_0.asp

Centers for Disease Control and Prevention (CDC) and National Program for Cancer Registries (NPCR)

- United States Cancer Statistics: 2003 Incidence

<http://www.cdc.gov/cancer/npcr/uscs/index.htm>

National Cancer Institute (NCI)

- Surveillance, Epidemiology and End Results (SEER) Cancer Statistics Review, 1975-2003

http://www.seer.cancer.gov/csr/1975_2003/

North American Association of Central Cancer Registries (NAACCR)

- Statistics and Reports

http://www.naaccr.org/index.asp?Col_SectionKey=11&Col_ContentID=49